

REMARKS**I. General**

Claims 1-64 are pending in the present application. Applicant notes with appreciation that the Examiner has indicated that claims 33 and 37-41 contain allowable subject matter and would be allowed if rewritten in independent form.

Claims 12-32 and 34-36 stand rejected under 35 U.S.C. § 103. Applicant respectfully traverses the rejections of record.

Claim 35, although indicated as rejected in the Office Action Summary, is not specifically addressed within the body of the Office Action. Accordingly, Applicant respectfully points out that the rejection of claim 35 does not comport with Office policy. Specifically, the Examiner is directed that “[i]n accordance with the patent statute, ‘Whenever, on examination, any claim for a patent is rejected , or any objection . . . made’, notification of the reasons for rejection and/or objection together with such information and references as may be useful in judging the propriety of continuing the prosecution (35 U.S.C. 132) should be given,” M.P.E.P. § 707. As such the Examiner has not “clearly articulate[d] any rejection early in the prosecution process so that the applicant has the opportunity to provide evidence of patentability and otherwise respond completely at the earliest opportunity,” M.P.E.P. §706. Applicant therefore requests that the Examiner set forth the grounds for rejection with respect to claim 35 in order that Applicant may have a full and fair opportunity to explore the patentability of this claim.

Claims 1-11 and 42-64 stand withdrawn as being drawn to a non-elected invention. Applicant has shown in the Response to Restriction Requirement dated May 19, 2004, how the restriction requirement is improper. The arguments set forth in that response are believed to continue to be applicable and, thus, are incorporated herein by reference. The current Office Action does not cure the identified deficiencies in the restriction requirement. Accordingly, Applicant respectfully asserts that withdrawal of claims 1-11 and 42-64 from consideration is improper. As such, Applicant respectfully requests that claims 1-11 and 42-64 be examined or a proper requirement for restriction be made of record.

II. The 35 U.S.C. § 103 Rejections

Claims 12, 13, 16, 18-32, 34, and 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Tsutsui et al.*, United States patent number 6,385,181, (hereinafter *Tsutsui*) in view of *Reudink*, United States patent number 5,563,610, (hereinafter *Reudink*). Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable *Tsutsui* in view of *Reudink* and further in view of *Brookner et al.*, United States patent number 6,104,343, (hereinafter *Brookner*). Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Tsutsui* in view of *Reudink* and further in view of *Sanford et al.*, United States patent number 5,294,939, (hereinafter *Sanford*). Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Tsutsui* in view of *Reudink* and further in view of *Hall et al.*, United States patent number 5,721,554, (hereinafter *Hall*).

To establish a *prima facie* case of obviousness, three basic criteria must be met, see M.P.E.P. § 2143. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Without conceding the second criteria, Applicant respectfully asserts that the references lack proper motivation to combine in addition to lacking all the claim limitations.

In rejecting independent claim 12 over *Tsutsui* in view of *Reudink*, the rejection of record concedes that *Tsutsui* does not teach signal transmission circuitry providing M orthogonal renditions of a first signal, see the Office Action at page 3. However, the rejection of record states that *Tsutsui* discloses “signal reception circuitry providing discrete information with respect to each one of M orthogonal renditions of a first signal,” see the Office Action at page 2. These statements appear to be inconsistent. Applicant is unable to understand how a reference can disclose receiving M orthogonal renditions of a first signal if M orthogonal renditions of the first signal are not transmitted.

Moreover, the claim requires “signal transmission circuitry providing M orthogonal renditions of a first signal, wherein said signal transmission circuitry is coupled to said M spaced apart antenna elements to provide a different one of said M orthogonal renditions of said first signal to each of said M spaced apart antenna elements [and] signal reception

circuitry providing discrete information with respect to each one of said M orthogonal renditions of said first signal” *Tsutsui* merely discloses a standard rake receiver configuration in which a signal received in various directional beams is despread, see column 7, lines 38-49. Even if it were assumed that the directional antenna beam signals disclosed in *Tsutsui* were orthogonal, it cannot be said that they each correspond to orthogonal signals provided to each of M spaced apart transmission antenna elements. The addition of a reference which may teach a transmission system providing one of M orthogonal renditions of a signal to each of M spaced apart antenna elements could not cure the deficiency in the *Tsutsui* disclosure as these signals would combine in free-space to simply result in directional antenna beam signals at *Tsutsui* which do not correlate to the transmitted orthogonal signals. Accordingly, Applicant asserts that the rejection of record fails to show that the invention of the claims is present in or obvious from the disclosure of the applied references.

Moreover, the rejection of record does not establish that the applied art teaches or suggests transmission circuitry providing M orthogonal renditions of a first signal, as is conceded to be absent from the disclosure of *Tsutsui*. The rejection of record relies upon Figure 5 of *Reudink* to disclose signal transmission circuitry providing M orthogonal renditions of a first signal. However, Figure 5 of *Reudink* discloses receive circuitry. The transmit block shown in Figure 5 provides a control signal to the receive switch matrix and, therefore, does not teach or suggest signal transmission circuitry providing M orthogonal renditions of a first signal. As such, the proffered combination does not meet all elements of the claim.

The rejection of record asserts that *Tsutsui* discloses channel estimator circuitry which determines a spatial signature associated with the receive signal and beam forming circuitry providing beam forming coefficients, which are determined as a function of a conjugate of the spatial signature, to be used in transmission of a second signal, see the Office Action at page 2. However, the rejection of record only generally refers to Figures 1-3, 10, 11, 13-18, and the entire detailed description of *Tsutsui*. Such a rejection is in contravention of Rule 104 stating that “[w]hen a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable,” 37 C.F.R. § 1.104(c). Moreover, Applicant’s review of *Tsutsui* has been unable to identify any portion thereof teaching or suggesting using discrete information with respect to received orthogonal signals to determine a spatial signature of the channel and determining

beam forming coefficients for use in transmitting a signal as a function of the conjugate of the spatial signature. Instead, *Tsutsui* appears to merely teach receive beam selection, see column 11, lines 12-25. This disclosure is insufficient to teach or suggest the present claim.

In proffering the combination of *Tsutsui* in view of *Reudink*, the rejection of record states that “[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the above teaching of *Reudink* to *Tsutsui* et al. in order to improve transmission quality as well as the reception characteristic,” see the Office Action at page 3. It is well settled that the fact that references can be combined or modified is not sufficient to establish a *prima facie* case of obviousness, M.P.E.P. § 2143.01. The language of the recited motivation is circular in nature, stating that it is obvious to make the modification because it is obvious to achieve the result. Such language is merely a statement that the reference can be modified, and does not state any desirability for making the modification. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination, M.P.E.P. § 2143.01 (citing *In re Mills*, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990)). Thus, the motivation provided by the Examiner is improper, as the motivation must establish the desirability for making the modification.

From the above, Applicant respectfully asserts that a *prima facie* case of obviousness under 35 U.S.C. § 103 over *Tsutsui* in view of *Reudink* has not been established with respect to claim 12. Moreover, as claims 13, 16, 18-32, 34, and 36 depend directly or indirectly from claim 12, these claims are also asserted to be patentable over the 35 U.S.C. § 103 rejections of record at least for the reasons set forth above with respect to claim 12. Claims 14, 15, and 17 also depend directly or indirectly from claim 12. The tertiary references *Brookner*, *Sanford*, and *Hall* are not relied upon to cure the above identified deficiencies with respect to *Tsutsui* and *Reudink*. Accordingly, claims 14, 15, and 17 are asserted to be patentable over the 35 U.S.C. § 103 rejections of record at least for the reasons set forth above with respect to claim 12.

Moreover, the dependent claims recite additional limitations which are not taught or suggested by the art of record. For example, claim 17 recites that the “4 spaced apart antenna elements provide an antenna aperture of approximately 10 wavelengths.” This limitation is not shown in the references of record. Although the rejection of record relies upon the

disclosure of *Hall* to meet the foregoing limitation (see the Office Action at page 7), the relied upon portion of *Hall* merely teaches “a synthesized one-dimensional linear planar wavefront of radiation over at least ten wavelengths,” see the Abstract of *Hall*. This disclosure provides no detail with respect to the antenna aperture, and therefore cannot be read to meet the claim.

Claim 20 recites “pilot signal beam forming emulation circuitry” Although the rejection of record generally avers that somewhere within Figures 1-3, 10, 11, and 13-18 and the entire detailed description of *Tsutsui* this aspect of the claim is taught (see the Office Action at page 4), such is not the case. Applicant is unable to even find the word “emulate” or “emulation” in the entire disclosure of *Tsutsui*.

Claim 21 recites that “said orthogonal renditions of said first signal are derived from power dividing said first signal M ways and separately coding each of said M power divided first signals.” After having conceded that *Tsutsui* does not teach transmission of orthogonal renditions of a first signal (see the Office Action at page 3), the rejection of record later asserts *Tsutsui* teaches power dividing a first signal M ways and separately coding each of the M power divided first signals (see the Office Action at page 3). Applicant can find nothing in the disclosure of *Tsutsui* to teach or suggest power dividing a first signal and separately coding each of the power divided first signals. Moreover, even if *Tsutsui* did teach the foregoing, there is nothing to teach or suggest modifying *Reudink* (which is relied upon in the rejection of record to teach transmission of the recited orthogonal signals) to provide separately coded power divided first signals to each of the spaced apart antenna elements, nor has the rejection of record asserted otherwise.

Claim 23 recites that “said pseudo noise codes are Walsh codes.” Although the rejection of record generally avers that *Tsutsui* teaches that pseudo noise codes are Walsh codes (see the Office Action at page 4), an electronic search of the entire disclosure of *Tsutsui* does not identify even one mention of a Walsh code.

Claim 25 recites that “said first signal is provided to said M spaced apart antenna elements without beam forming processing and said second signal is provided to said M spaced apart antenna elements with beam forming processing.” Once again, although having already conceded that *Tsutsui* does not teach transmission circuitry providing the first signal

to M spaced apart antenna elements (see the Office Action at page 3), the rejection of record later asserts that *Tsutsui* teaches providing the first signal to the M spaced apart antenna elements without beam forming (see the Office Action at page 4). From Applicant's review of *Tsutsui*, it appears that the circuits taught therein (each of which appears to be only a receive circuit) implements beam forming with respect to the signals.

Claim 27 recites providing "M dimensional column vectors describing said spatial signature." The rejection of record generally avers that *Tsutsui* teaches deriving $N \times M$ dimensional column vectors, see the Office Action at page 5. However, Applicant's review of *Tsutsui* does not reveal the recited M dimensional column vectors describing the spatial signature recited in the claim.

Claim 30 recites that "said spatial signature includes a channel quality metric." The rejection of record generally avers that *Tsutsui* teaches that the spatial signature includes a channel quality metric, see the Office Action at page 5. In addition to the disclosure of *Tsutsui* not even mentioning a spatial signature, Applicant's review of *Tsutsui* has not identified any disclosure of a spatial signature including a channel quality metric.

Claim 34 recites "receiver grouping logic, wherein said spatial signature is utilized by said receiver grouping logic to group ones of a plurality of receivers" Although the rejection of record generally avers that *Tsutsui* teaches receiver grouping logic (see the Office Action at page 6), Applicant is unable to locate any disclosure of a plurality of receivers in *Tsutsui* to be grouped.

Claim 36 recites "data rate determining logic" Although the rejection of record generally avers that *Tsutsui* teaches data rate determining logic (see the Office Action at page 6), Applicant's review of *Tsutsui* fails to reveal any disclosure of data rates what-so-ever.

III. Summary

In view of the above, Applicant believes the pending application is in condition for allowance. Accordingly, Applicant requests that the Examiner pass the application to issue.

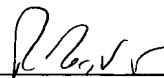
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Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 06-2380, under Order No. 65948/P057US/10400208 from which the undersigned is authorized to draw.

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Respectfully submitted,

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